

Commissioner for Patents

Serial Number 09/990,876

REMARKS

Claims 1-2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al. (5,772,453) in view of Szeto (6,375,495) and Sung (6,518,961). This rejection is respectfully traversed for the following reasons.

Claim 1 is directed to a computer motherboard-mounted graphics card having at least one I/O connector. The card comprises a DVI connector footprint capable of receiving a DVI connector and positioned on the graphics card adjacent to a vertical edge of the card; an HD-15 connector footprint capable of receiving an HD-15 connector and positioned on the graphics card behind the DVI connector footprint; and one of a right-angle, vertical edge, DVI connector and a right-angle, vertical edge HD-15 connector mounted with pins in a selected one of the DVI connector footprint and the HD-15 connector footprint.

Tan et al. describe an arrangement for the adoption of either the traditional UART D-Sub connector or the upgrading USB connector with a same motherboard. The design comprises a side-by-side dual-port USB connector assembly with a traditional D-Sub connector.

Szeto teaches a connector that provides support for analog, digital, and high frequency analog signals. The various connector positions of the connector are spaced in a manner that minimizes the surface of the front face of the connector such that it can be accommodated within the bracket dimensions of an ATX bracket along with a DVI connector.

Sung teaches an adapter device for separating synchronizing signal from sync-on-green video signal and color display apparatus with same. The adapter device comprises a D sub-connector, which may be composed of an HD-15 connector or a 13W3 connector.

In a preceding response, the Applicant argued that Tan et al. does not disclose having a footprint for a DVI connector and a footprint for an HD-15 connector. It would not have been obvious to provide one of a DVI connector and an

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HD-15 connector in combination with the appropriate footprints on a graphics card based on Tan et al. alone without additional teachings in the art.

While the Examiner has cited two additional references to teach the DVI connector and the HD-15 connector, the Applicant hereby submits that these two references fail to lead a person skilled in the art of the present invention to the structure claimed in claim 1.

Firstly, Tan et al. teaches away from the invention. The structure of claim 1 reduces interference between two connectors by having the higher bandwidth connector closer to the edge of the board. In Tan et al., the higher bandwidth connector, namely the USB connector, is located away from the edge of the board. Therefore, should a person skilled in the art simply want to substitute the two connectors from Tan et al. with a DVI connector and an HD-15 connector, the DVI connector could easily be placed away from the edge in the position of the USB connector, since this is the one with the higher bandwidth. Claim 1 clearly recites "a DVI connector footprint capable of receiving a DVI connector and positioned on said graphics card adjacent to a vertical edge of the card". If the DVI connector were placed in the position of the USB connector of Tan et al., it would not meet the limitation of claim 1 with regard to being "adjacent to a vertical edge". There are no teachings in Tan et al. to place the higher bandwidth connector near the edge of the board.

Furthermore, the two connectors disclosed by Tan et al. are both generally low bandwidth connectors and therefore, are not intuitively interchangeable with higher bandwidth connectors such as those recited in claim 1. It is known in the field of connectors that high bandwidth connectors may suffer from interference when placed in close proximity. Therefore, it would not have been obvious to simply switch the connectors disclosed by Tan et al. for those of the present claims.

While Szeto discloses an expansion card having a DVI connector, it does not teach placing the DVI connector near the edge of a board while having an HD-15 connector "positioned on said graphics card behind said DVI connector footprint", as recited in claim 1. Both the mixed signal connector and the DVI

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connector of Szeto are placed on the edge of the card. This is done to provide external access to the connectors through apertures included in a bracket. There are no teachings with respect to intentionally providing the DVI connector near the edge in order to reduce interference between the two connectors. Therefore, there is no motivation in Szeto to take the motherboard of Tan et al. and replace the two connectors therein by a DVI connector that would be close to the vertical edge of the board. Moreover, if a person skilled in the art were to follow the teachings of Szeto, the two connectors would need to be positioned side-by-side on the edge of the card, as is illustrated in the prior art figures of the present application. The present application specifically teaches away from this configuration by providing the connectors one behind the other instead of side-by-side. Therefore, Szeto also teaches away from the claimed invention.

With respect to Sung, there are no teachings about the positioning of an HD-15 connector on a board. There are no teachings about the positioning of a DVI connector on a board. An HD-15 connector is mentioned with respect to an adapter device. This does not motivate a person skilled in the art to arrive at the structure of claim 1, even if combined with Tan et al. and Szeto.

The Examiner has failed to demonstrate how a person skilled in the art would conclude, from a reference teaching away from the invention by having relatively low-bandwidth connectors on a board, where the higher bandwidth-connector is positioned further from the vertical edge than the lower-bandwidth connector, a reference that teaches away from the invention by having side-by-side connectors, and a reference that includes an HD-15 connector in an adapter device, that the structure of the board should be as recited in claim 1. There are no teachings as to the effects of interference between connectors when one is of high-bandwidth. Furthermore, there are no teachings with respect to the positioning of connector footprints on a board for reasons other than space economy.

With respect to claim 4, the claim is as follows: "The computer card as claimed in claim 2, wherein said vertical edge has a lower cut-out for accommodating a double-high connector, said DVI connector footprint and said HD-15 connector

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footprint are positioned at an upper portion of the computer card, and said HD-15 connector footprint is located at a horizontal distance from said vertical edge greater than said lower cut-out, whereby a same HD-15 connector connectable to said HD-15 connector footprint could reach a footprint located on a lower portion of the computer card". Neither Tan et al., Szeto, or Sung teach having the footprints "positioned at an upper portion of the computer card", and having the HD-15 connector footprint "located at a horizontal distance from said vertical edge greater than said lower cut-out". This structure has not been taught or suggested by the references cited by the Examiner.

Claims 3, 7, and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al., Szeto, and Sung and further in view of Fabian et al. (5,080,609). This rejection is respectfully traversed for the following reasons.

Fabian et al. describes a stacked electrical connector assembly of surface mounting on a circuit board. The Examiner claims that the boardlock of figure 14 of Fabian et al. reads on a third card mounting member. The Applicant fails to see how a stacked electrical connector assembly could teach a third mounting on a card. With respect to figure 14, Fabian et al. state the following: "In the embodiment of FIG. 14 the assembly 2J, which is otherwise substantially the same as the assembly 2, has an upper connector 6J which is of a different kind from the lower connector 8. The upper connector is in the form of a jack having spring contact 100 and mounting lugs 102 which are fixed to flanges 20H of the bracket 4H by means of rivets 104." (col 8, lines 25-31). From this passage, it can be understood that the assembly illustrated in figure 14 has two connectors. There is no third connector to teach the third card mounting member.

Furthermore, claims 3 and 7 clearly recite "a third card mounting member *positioned closer to said vertical edge*" (emphasis added). The boardlock of figure 14 does not in any way teach that the third mounting should be positioned closer to the vertical edge than the first pair of card mounting members. Therefore, claims 3 and 7 are not obvious in view of the cited art.

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Regarding claims 17-21, please see the arguments with respect to claims 1,2, and 4-6.

Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al. in view of Szeto. The Applicant respectfully traverses this rejection for the following reasons.

While Tan et al. does teach two footprints positioned one behind the other, they are not positioned at an upper portion of the computer card. As illustrated in figures 4A and 4B of Tan et al., footprints 106 and 108 are positioned substantially centrally on the motherboard. Therefore, this limitation is not met. In addition, the claim recites "a farther one of the two footprints located at a horizontal distance from said vertical edge greater than said lower cut-out". Tan et al. does not teach having a lower cut-out and therefore, cannot position the footprints with respect to the lower cut-out. The Examiner cites Szeto as teaching the expansion card having a lower cut-out. While the Applicant agrees that the card shown in figure 5 of Szeto has a lower cut-out, there are no teachings as to the positioning of the footprints with respect to the lower cut-out. Furthermore, it would not have been obvious to a person skilled in the art to provide the structure of claim 8. There is no motivation in either reference to modify the taught structures in any way, and there is no teachings that would have led a person skilled in the art to positioning two footprints one behind the other at an upper portion of the computer card and with one of the two footprints located at a horizontal distance from the vertical edge greater than the lower cut-out.

With respect to claim 9, please see the arguments above having regard to claim 5. The structure recited in claim 9 is unique and has not been taught or suggested by any of the cited references.

With respect to claim 10, the claim states: "further comprising two sets of connector mounting member receiving holes provided in the computer card in a same position arrangement with respect to the farther one of the two footprints and to the third footprint, one of said holes being positioned with respect to the third footprint so as to be located near an upper edge of the lower cut-out close to a vertical edge of the computer card, whereby a connector-to-card mounting member received by

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the one of said holes can help to stabilize the I/O connector on the computer card when mounted in either the upper or lower portion of the card." The Examiner has ignored all of the structural elements of the claim with respect to the positioning of the connecting mounting member receiving holes. Tan et al. does not teach such positioning with respect to the receiving holes in the computer card. The Examiner has provided no evidence to this effect.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al. and Szeto as applied to claim 11, and further in view of Sung. This rejection is traversed for the same reasons cited above with respect to claim 11.

The Applicants believe the claims, as they currently stand, overcome the Examiner's obviousness rejections and a Notice of Allowance for claims 1-12 and 16-21 is respectfully requested.

Respectfully submitted,
Robert LAFLEUR

By:



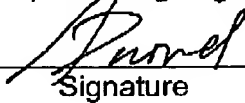
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